

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 26 and 27 have been canceled. New claim 34 has been added.

This amendment changes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claims remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-25 and 28-34 are now pending in this application.

Rejection Under 35 U.S.C. §102

Claims 1-4 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent 5,006,178 to Bijvoets (hereafter "Bijvoets"). Applicant respectfully traverses this rejection for at least the reasons set forth below.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See generally MPEP § 2131.

Bijvoets discloses a thermoelectric device that includes thermoelectric elements 4 formed by element halves 6, 7, with an element half 6 including two P conductivity type semiconducting pieces 8 and an intermediate piece 9, and with an element half 7 including two N conductivity type semiconducting pieces 10 and an intermediate piece 9. See col. 2, line 52, to col. 3, line 3, of Bijvoets. The thermoelectric elements 4 are connected by bridges 5. See col. 2, lines 54-55, of Bijvoets. Bijvoets also discloses that the semiconducting pieces 8, 10 can be made of BiTe and that the intermediate pieces 9 can be made of copper. See col. 4, lines 24-26, and col. 5, lines 7-21, of Bijvoets.

However, Bijvoets fails to disclose a thermoelectric effect device:

...wherein between the endothermic section and the exothermic section, a distance is secured for so keeping a temperature T_{α} at the endothermic section and a temperature T_{β} at the exothermic section as to keep a relation
 $T_{\alpha} < T_{\beta}$

as recited in claim 1;

a thermoelectric effect device:

wherein between the endothermic section and the exothermic section, a distance is secured for so keeping a temperature T_{α} at the endothermic section and a temperature T_{β} at the exothermic section as to keep a relation $T_{\alpha} > T_{\beta}$

as recited in claim 2;

an energy direct conversion system in which:

a distance being secured for so keeping an ambient temperature T_1 of the thermoelectric converter element on a high temperature side and an ambient temperature T_2 of the thermoelectric converter element on a low temperature side as to keep a relation $T_1 > T_2$,

as recited in claim 3; and

an energy direct conversion system in which:

a distance being secured for so keeping an ambient temperature T_1 of the thermoelectric converter element on a high temperature side and an ambient temperature T_2 of the thermoelectric converter element on a low temperature side as to keep a relation $T_1 > T_2$,

as recited in claim 4.

When current flows in a positive direction through the device of Bijvoets, a heat evolvment occurs at each junction between a bridge 5 and an end piece 8, 10 and a heat absorption occurs at each junction between an end piece 8, 10 and an intermediate piece 9. However, because the thermal conductivity of BiTe is about $1/270^{\text{th}}$ that of copper, there will be a large difference in the amount of heat flowing through end pieces 8, 10 and through the intermediate pieces 9, such as by about 3.7 times. Thus, a temperature difference does not occur between thermoelectric converter elements because of the large difference in heat flows, causing the heat evolvments and heat absorptions to interfere with one another. Column 1, paragraph 5, and column 3, lines 46-64, of Bijvoets do not disclose this feature either. Therefore, the device of Bijvoets does not anticipate claims 1-4 because the device of Bijvoets does not provide the distances recited in claims 1-4.

Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 1-4 are rejected under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Pub. No. 2003/0230332 to Venkatasubramanian *et al.* (hereafter “Venkatasubramanian”). Applicant respectfully traverses this rejection for at least the reasons discussed below.

Venkatasubramanian discloses a thermoelectric device that includes thermoelectric elements of opposite conductivity type located on respective opposing sides of a heat source member. See abstract of Venkatasubramanian. Venkatasubramanian further discloses heat sinks disposed on opposite sides of the thermoelectric elements Peltier metal contacts positioned between the thermoelectric elements and each of the heat source member and heat sinks. See abstract of Venkatasubramanian.

However, similarly to Bijvoets, Venkatasubramanian fails to disclose the distances recited in claims 1-4. Consequently, and for at least these reasons, Venkatasubramanian does not anticipate claims 1-4.

Applicant respectfully reserves the right to overcome this rejection by submitting a translation of the foreign priority papers or submitting other evidence of date of invention prior to the filing date of Venkatasubramanian.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of this rejection.

Rejections Under 35 U.S.C. §103

Claim 5 is rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bijvoets in view of U.S. Patent 6,271,459 to Yoo (hereafter “Yoo”).

Claims 6, 7, 26, and 27 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bijvoets in view of U.S. Patent 6,100,600 to Pflanz (hereafter “Pflanz”).

Claims 8, 9, 11, 12, 14, 15, 17, 18, 20, 21, 23, and 24 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bijvoets in view of U.S. Patent 5,987,891 to Kim *et al.* (hereafter “Kim”).

Claims 10, 13, 16, 19, 22, and 25 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bijvoets in view Yoo and further in view of Kim.

Claims 28, 29, 31 and 32 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bijvoets in view of Kim and further in view of Pflanz.

Claims 30 and 33 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Bijvoets in view of Yoo and further in view of Kim and Pflanz.

Applicant respectfully traverses these rejections. Yoo, Pflanz, and Kim fail to remedy the deficiencies of Bijvoets discussed above. Therefore, the combinations of Bijvoets with Yoo, Pflanz, and/or Kim set forth by the Office above fail render claims 5-25 and 28-33 as unpatentable.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejections under §103.

Provisional Obviousness-Type Double Patenting Rejections

Claims 1-33 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-15 of co-pending Application No. 10/537,357.

Inasmuch as this is a *provisional* rejection, Applicant respectfully requests that the Office hold this rejection in abeyance while the prior art rejections are resolved. Applicant also reserves the right to take further action should the rejection become non-provisional.

New Claim

New claim 34 has been added. New claim 34 depends from claim 1 and is allowable over the prior art for at least the reasons discussed above and for its additional respective recitations.

CONCLUSION

Applicant submits that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

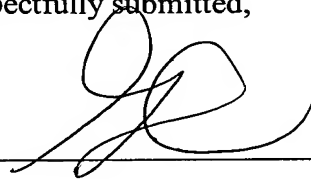
The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date

6/23/08

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